



Hydro One Networks Inc.
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LOCAL PLANNING REPORT

**Orangeville TS End-of-Life Replacement
Region: South Georgian Bay / Muskoka**

Date: May 27, 2016

Prepared by: Hydro One Networks Inc. (Transmission & Distribution)

Study Team
Organization
Hydro One Networks Inc. (Lead Transmitter)
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Disclaimer

This Local Planning Report was prepared for the purpose of developing wires-only options and recommending a preferred solution(s) to address the local needs identified in the Needs Assessment (NA) report for the South Georgian Bay / Muskoka Region that do not require further coordinated regional planning. The preferred solution(s) that have been identified through this Local Planning Report may be reevaluated based on the findings of further analysis. The load forecast and results reported in this Local Planning Report are based on the information and assumptions provided by study team participants.

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LOCAL PLANNING EXECUTIVE SUMMARY

REGION	South Georgian Bay / Muskoka (the “Region”)		
LEAD	Hydro One Networks Inc. (“Hydro One”)		
START DATE	October 14, 2014	END DATE	May 27, 2016
1. INTRODUCTION			
<p>The purpose of this Local Planning (LP) report is to develop wires-only options and recommend a preferred solution that will address the local needs identified in the Needs Assessment (NA) report for the South Georgian Bay / Muskoka Region dated March 3, 2015. The development of the LP report is in accordance with the regional planning process as set out in the Ontario Energy Board’s (OEB) Transmission System Code (TSC) and Distribution System Code (DSC) requirements and the “Planning Process Working Group (PPWG) Report to the Board”.</p> <p>Based on Section 6 of the NA report, the study team recommended that coordinated regional planning is required to address the majority of needs in the South Georgian Bay / Muskoka region. The NA report also indicated that there are end-of-life needs at Orangeville TS and it was determined that these needs are local in nature and will be addressed by wires options through local planning led by Hydro One with participation of the impacted LDCs.</p>			
2. LOCAL NEEDS ADDRESSED IN THIS REPORT			
<p>There are no capacity needs identified for Orangeville TS over the next ten years. Hydro One has identified that transformers and associated protection, control and telecom equipment at Orangeville TS will be reaching the end of their useful life over the study period. The replacement of this end-of-life equipment is a local area need and is addressed in this report.</p>			
3. OPTIONS CONSIDERED			
<p>Hydro One (Transmitter) and Hydro One Distribution (LDC) have considered addressing the above need with the following options;</p> <p style="padding-left: 40px;">Alternative 0 – Status Quo. Alternative 1 – Like-for-like replacement of non-standard end-of-life equipment at Orangeville TS. Alternative 2 – Replacement of non-standard end-of-life equipment at Orangeville TS with standard equipment, and reconfiguration of Orangeville DESN.</p> <p>See Section 3 for further detail.</p>			
4. PREFERRED SOLUTION			
<p>The preferred solution at this time is Alternative 2 – Replacement of non-standard end-of-life equipment at Orangeville TS with standard equipment, and reconfiguration of Orangeville DESN. See Section 4 for details.</p>			
5. NEXT STEPS			
<p>Hydro One will proceed with end-of-life replacement of non-standard equipment based on conditions assessment. Currently, it is planned to be replaced in 2023.</p>			

TABLE OF CONTENTS

Local Planning Executive Summary.....	4
Table of Contents.....	5
List of Figures.....	5
List of Tables.....	5
1 Introduction.....	6
1.1 South Georgian Bay / Muskoka Region Description and Connection Configuration.....	6
2 Area needs.....	10
2.1 South Georgian Bay / Muskoka Region Needs.....	10
2.1 Needs Assessed by Hydro One Led Local Planning.....	10
3 Alternatives Considered.....	10
4 Preferred Alternative Selection.....	11
5 Next Steps.....	12
6 References.....	13
Appendix A: Diagrams.....	14
Appendix B: Load Forecasts South Georgian Bay/Muskoka.....	16
Appendix C: Acronyms.....	20

LIST OF FIGURES

Figure 1: South Georgian Bay / Muskoka Region Map.....	7
Figure 2: Single Line Diagram – South Georgian Bay / Muskoka Region.....	9
Figure 3: Orangeville T1/T2 DESN configuration after like-for-like replacement.....	14
Figure 4: Orangeville T1/T2 DESN after Alternative 3 reconfiguration.....	14
Figure 5: Orangeville T3/T4 DESN configuration after like-for-like replacement.....	15
Figure 6: Orangeville T3/T4 DESN after Alternative 3 reconfiguration.....	15

LIST OF TABLES

Table 1: Transmission Lines and Stations in the South Georgian Bay / Muskoka Region.....	8
Table 2: Budgetary Estimates for Alternatives.....	11
Table 3: Solutions and Timeframe.....	12

1 Introduction

The Needs Assessment (NA) for South Georgian Bay / Muskoka (“Region”) was triggered in response to the Ontario Energy Board’s (OEB) Regional Infrastructure Planning process approved in August 2013. Prior to the new regional planning process coming into effect, planning activities were already underway in the Region to address some specific station capacity needs. The NA report can be found on Hydro One’s Regional Planning website. The study team identified needs that are emerging in the South Georgian Bay / Muskoka Region over the next ten years (2014 to 2023) and recommended whether they should be further assessed through the transmitter-led Local Planning (LP) process or the IESO-led Scoping Assessment (SA) process.

1.1 South Georgian Bay / Muskoka Region Description and Connection Configuration

The South Georgian Bay / Muskoka Region is the area roughly bordered by West Nipissing to the northwest, Algonquin Provincial Park to the northeast, Peterborough County and Hastings County to the southeast, Lake Scugog, York and Peel Regions to the south, Wellington County to the southwest and Grey Highlands to the west. The boundaries of the Region are shown in Figure 1 below.

Electrical supply to the Region is provided through two (2) 500/230kV auto-transformers at Essa TS, the 230kV transmission lines connecting Minden TS to Des Joachims TS, the 230kV circuits E8V and E9V coming from Orangeville TS, and the single 115kV circuit S2S connecting to Owen Sound TS. There are sixteen (16) HONI step-down transformer stations in the Region, most of which are supplied by circuits radiating out from Essa TS, and the majority of the distribution system is at 44kV, except for Orangeville TS which has 27.6kV and 44kV feeders. Table 1 below lists the major transmission circuits and Hydro One stations in the subject region. Figure 2 shows the single-line diagram of the transmission network in the Region.

This region has the following two local distribution companies (LDC):

- PowerStream Inc.
- Hydro One Networks Inc. (Distribution)

There are several other LDCs in this region embedded into the Hydro One Distribution system. Although invited, many of them opted not to directly participate as part of the Study Team. However, the interests of all embedded LDCs were communicated and considered through Hydro One Distribution as a host LDCs.

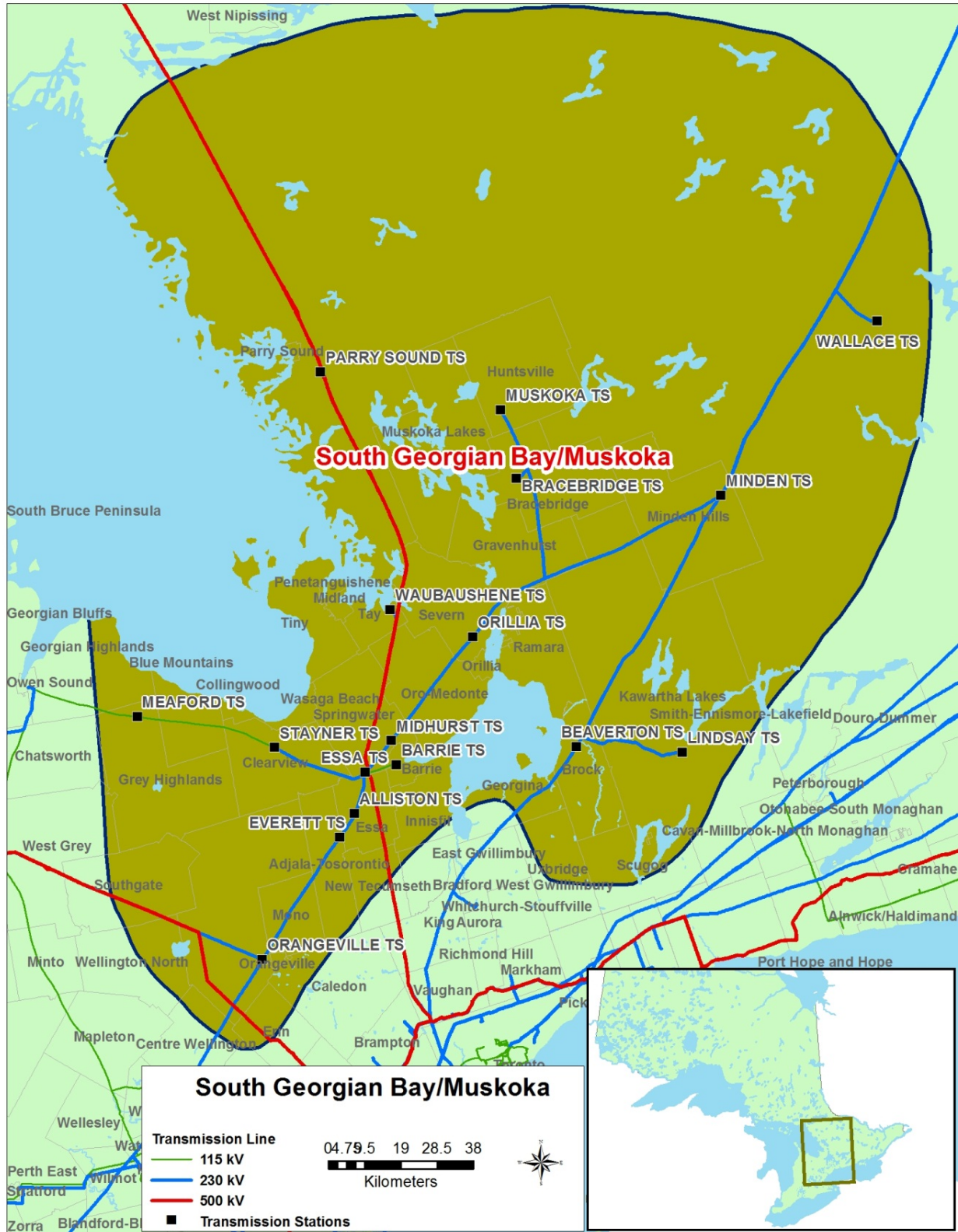


Figure 1: South Georgian Bay / Muskoka Region Map

Distribution connected loads of embedded LDCs in the South Georgian Bay / Muskoka region form a large percentage of the overall demand. Although these LDCs are not explicitly participating in the regional planning process, Hydro One considered their impact in this analysis.

Table 1: Transmission Lines and Stations in the South Georgian Bay / Muskoka Region

115kV circuits	230kV circuits	Hydro One Transformer Stations
E3B, E4B, S2S	E8V, E9V, E20S, E21S, M6E, M7E, D1M, D2M, D3M, D4M, M80B, M81B, E26, E27	ALLISTON TS, BARRIE TS, BEAVERTON TS, BRACEBRIDGE TS, EVERETT TS, LINDSAY TS, MEAFORD TS, MIDHURST TS, MINDEN TS, MUSKOKA TS, ORANGEVILLE TS, ORILLIA TS, PARRY SOUND TS, STAYNER TS, WALLACE TS, WAUBAUSHENE TS

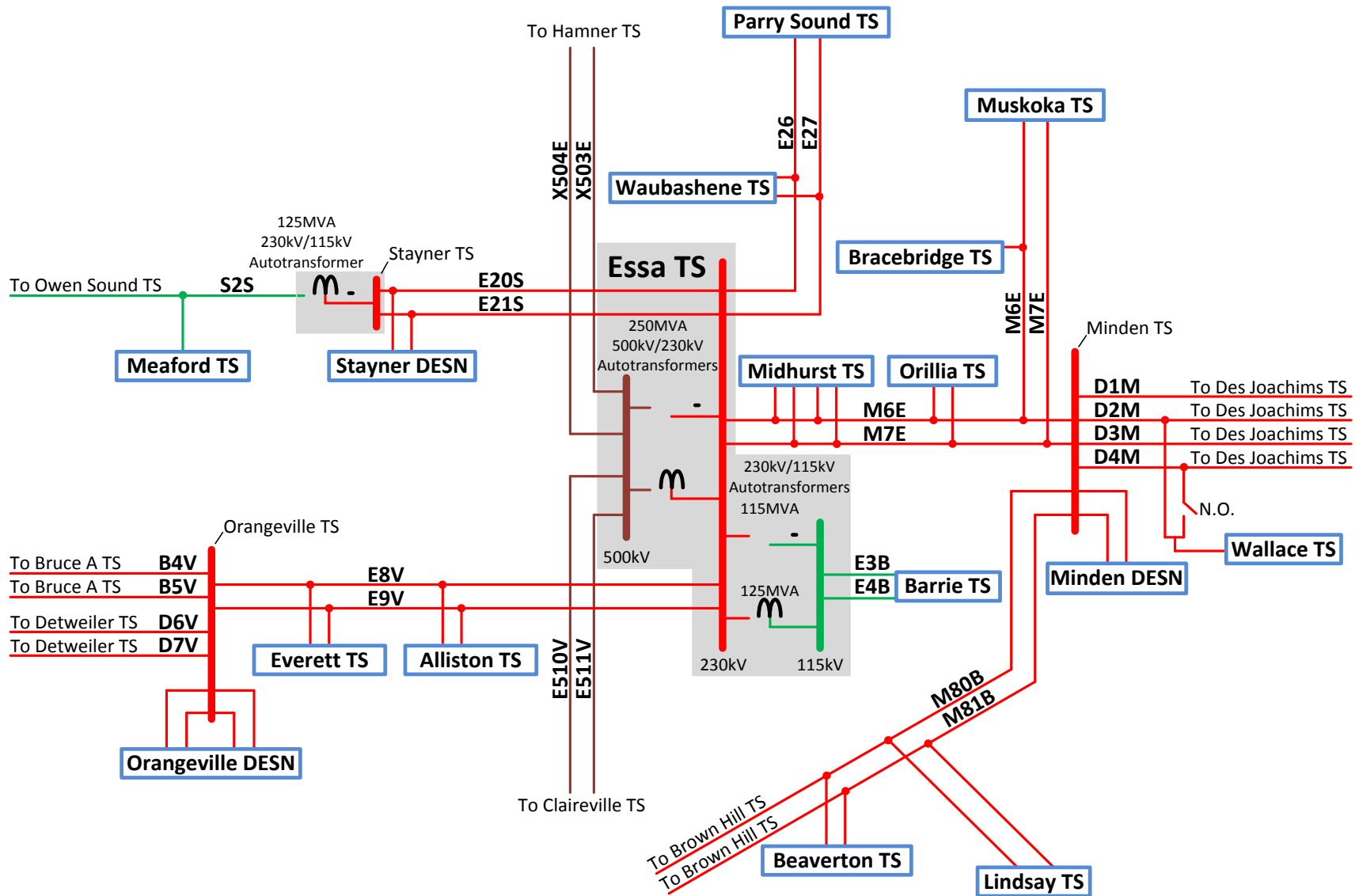


Figure 2: Single Line Diagram – South Georgian Bay / Muskoka Region

2 Area needs

2.1 South Georgian Bay / Muskoka Region Needs

As an outcome of the NA process, the study team identified six transformer stations with medium-term (5-10 years) capacity needs based on LDCs net load forecast which are not part of this Local Plan and will be addressed through the IRRP or RIP processes. It also identified a near-term end-of-life need at Orangeville TS in the South Georgian Bay / Muskoka Region to be addressed by developing a “Local Plan”. To address this need, Hydro One Transmission undertook planning assessments with the impacted LDC, to address the need.

2.1 Needs Assessed by Hydro One Led Local Planning

- Orangeville TS End-of-Life Replacements – The 27.6 kV and 44 kV switchyards at Orangeville TS were placed in-service in late 1960s and several of the assets are at the end of their useful life. Previous assessments have identified that all four transformers T1, T2, T3, and T4 and associated equipment are candidates for replacement over the next few years. In addition, the existing 210-44-28 kV winding configuration on T1 and T2 is non-standard, which introduces challenges with maintenance, spare parts and future replacement strategies.

3 Alternatives Considered

Hydro One Transmission reviewed the above need and determined that Hydro One Distribution is the sole transmission-connected LDC impacted by the end-of-life replacements at Orangeville TS. Orangeville Hydro Limited (OHL), which supplies power to the Orangeville area, is an embedded LDC connected to the Hydro One-owned distribution system at Orangeville TS. OHL is also impacted by the end-of-life replacements and its interests were taken into consideration in determining the preferred alternative. Following options were considered to address the needs identified in Section 2.

Alternative 0 – Status Quo.

No further action taken at this time. Hydro One and LDC will monitor the aging equipment over the next three years and perform maintenance as issues arise. Further review will be undertaken in the next planning cycle or earlier and aging equipment will be replaced as failures arise.

Alternative 1 – Like-for-like replacement of non-standard end-of-life equipment at Orangeville TS

End-of-life transformers T1 and T2 will be replaced like-for-like by customized 75/125MVA transformers with non-standard 210-44-28kV three-winding configuration. A customized spare transformer would also be required in case T1 or T2 is removed from service for an extended period of time. End-of-life transformers T3 and T4 will be replaced like-for-like by standard 50/83MVA 220/44kV transformers. All associated end of life protection, control and telecom assets will be replaced as well as station service equipment. See figure 3 and figure 5.

Alternative 2 – Replacement of non-standard end-of-life equipment at Orangeville TS with standard equipment, and reconfiguration of Orangeville DESN

End-of-life transformers T1 and T2 (non-standard) will be replaced with two standard three-phase transformers sized 215.5-28 kV, 50/66.7/83.3 MVA units and T3 and T4 will be replaced with standard 215.5-44 kV, 75/100/125 MVA units. To standardize the configuration, the T1/T2 switchyard will be reconfigured as a single 230-28 kV switchyard and the two existing 44 kV feeders, M45 and M46, will be relocated and supplied from the T3/T4 DESN. All associated end-of-life protection, control and telecom assets will be replaced as well as station service equipment. See figure 4 and figure 6.

Table 2 provides a budgetary cost summary of a cost of all options.

Table 2: Budgetary Estimates for Alternatives

Options Considered	Cost
Alternative 0 – Monitor aging equipment over the next 3 years and perform maintenance as issues arise.	Will result in poor reliability not acceptable
Alternative 1 – Like-for-like replacement of non-standard end-of-life equipment at Orangeville TS.	\$35-40M
Alternative 2 – Replacement of non-standard end-of-life equipment at Orangeville TS with standard equipment, and reconfiguration of Orangeville DESN.	\$30M

4 Preferred Alternative Selection

A recent station assessment has confirmed that transformers T1, T2, T3, T4 and associated equipment as well as associated end of life protection, control and telecom assets will be approaching end of their useful life. Integration of the replacement of multiple end-of-life components into a single investment allows additional efficiencies to be realized during the design, construction, and commissioning stages of the work.

Orangeville Hydro Limited (OHL) has also expressed their intent to further increase their use of the 27.6 kV feeders supplied from Orangeville TS. Consequently, OHL also intends to reduce the number of customers and stations connected to the 44 kV feeders M3 and M5. Therefore, in an effort to standardize the configuration in the T1/T2 switchyard it can be reconfigured as a single 230-28 kV switchyard and the two existing 44 kV feeders, M45 and M46, relocated and supplied from the T3/T4 DESN. In this option, transformers T3 and T4 will be replaced, increasing capacity to maintain overall available capacity on the 44 kV network.

Hydro One Transmission and the LDCs reviewed all alternatives and concluded that Status Quo and Alternative #1 are not preferred options. It recommends to proceed with Alternative 2 – Replacement of non-standard end-of-life equipment at Orangeville TS with standard equipment, and reconfiguration of Orangeville DESN.

The study team’s recommendation to replace end-of-life equipment at Orangeville TS will also improve the level of reliability and quality of service. Currently, it is expected that the these equipment will be replaced in 2023. The cost of this investment is expected to be a transmission pool investment and LDCs are not expected to pay to replace the transmission equipment.

5 Next Steps

A summary of the next steps, actions/solutions and timelines required to address the local needs are as follows:

Table 3: Solutions and Timeframe

Need	Action / Recommended Solution	Lead Responsibility	Timeframe
End-of-life replacements at Orangeville TS	<ul style="list-style-type: none"> Alternative 2 – Replacement of non-standard end-of-life equipment at Orangeville TS with standard equipment, and reconfiguration of Orangeville DESN. 	Hydro One Networks	Expected In- Service 2023

6 References

- [1] Planning Process Working Group (PPWG) Report to the Board: The Process for Regional Infrastructure Planning in Ontario – May 17, 2013
- [2] IESO Ontario Resource and Transmission Assessment Criteria (ORTAC)
- [3] South Georgian Bay / Muskoka Needs Assessment Report

Appendix A: Diagrams

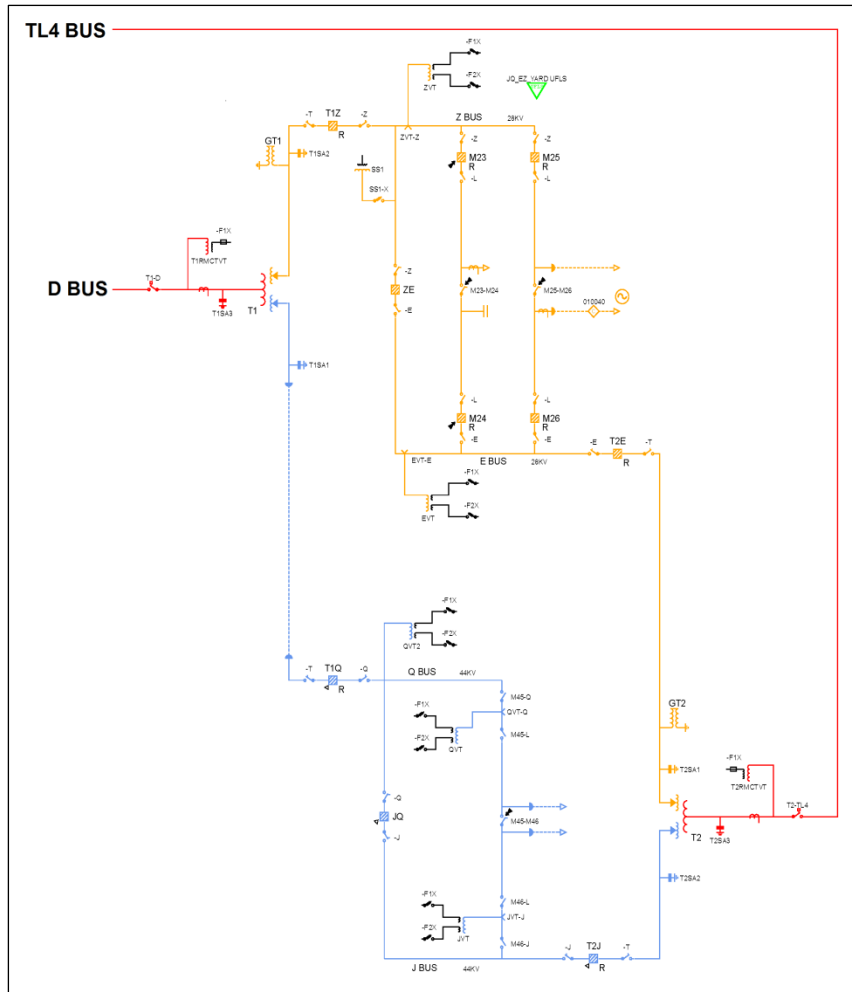


Figure 3: Orangeville T1/T2 DESN configuration after like-for-like replacement

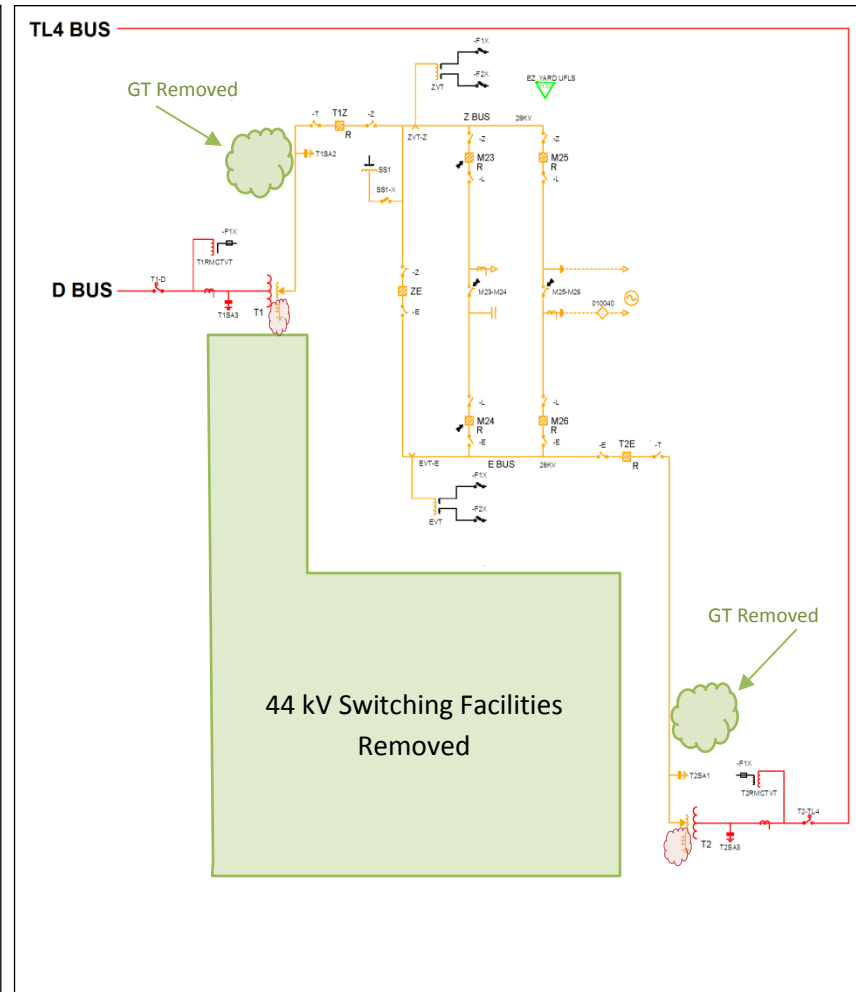


Figure 4: Orangeville T1/T2 DESN after Alternative 3 reconfiguration

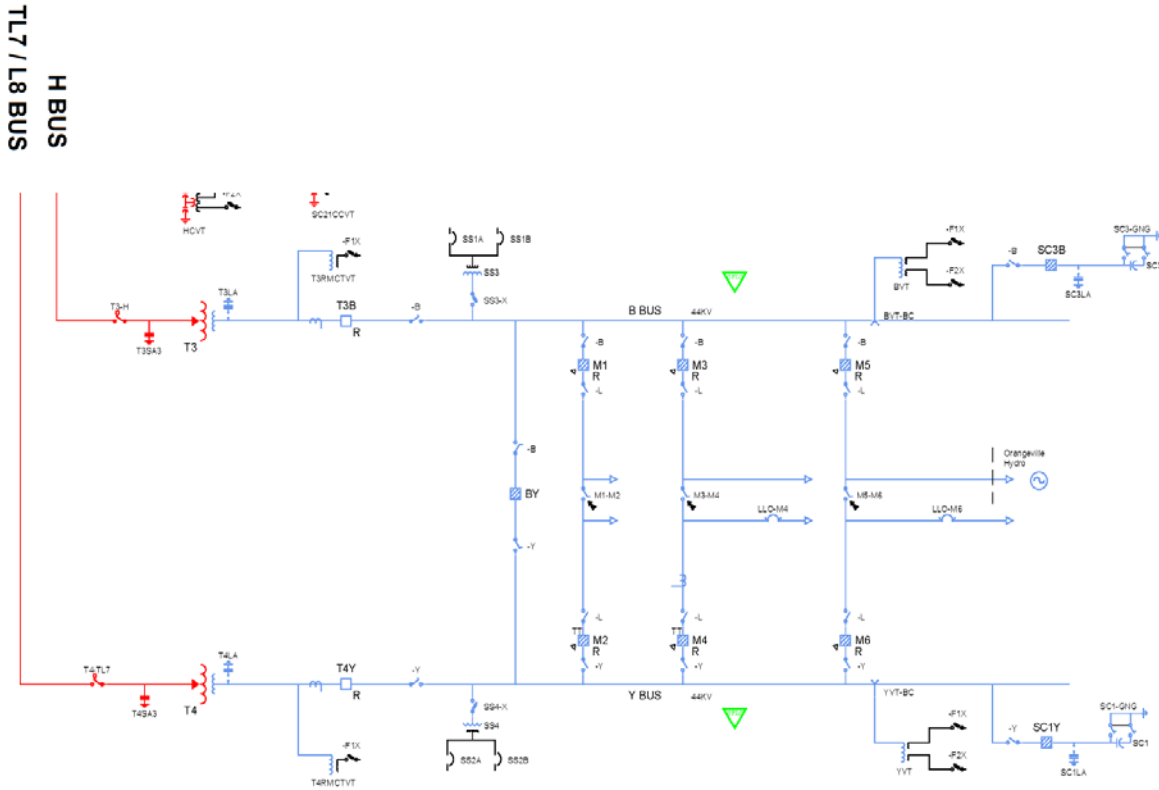


Figure 5: Orangeville T3/T4 DESN configuration after like-for-like replacement

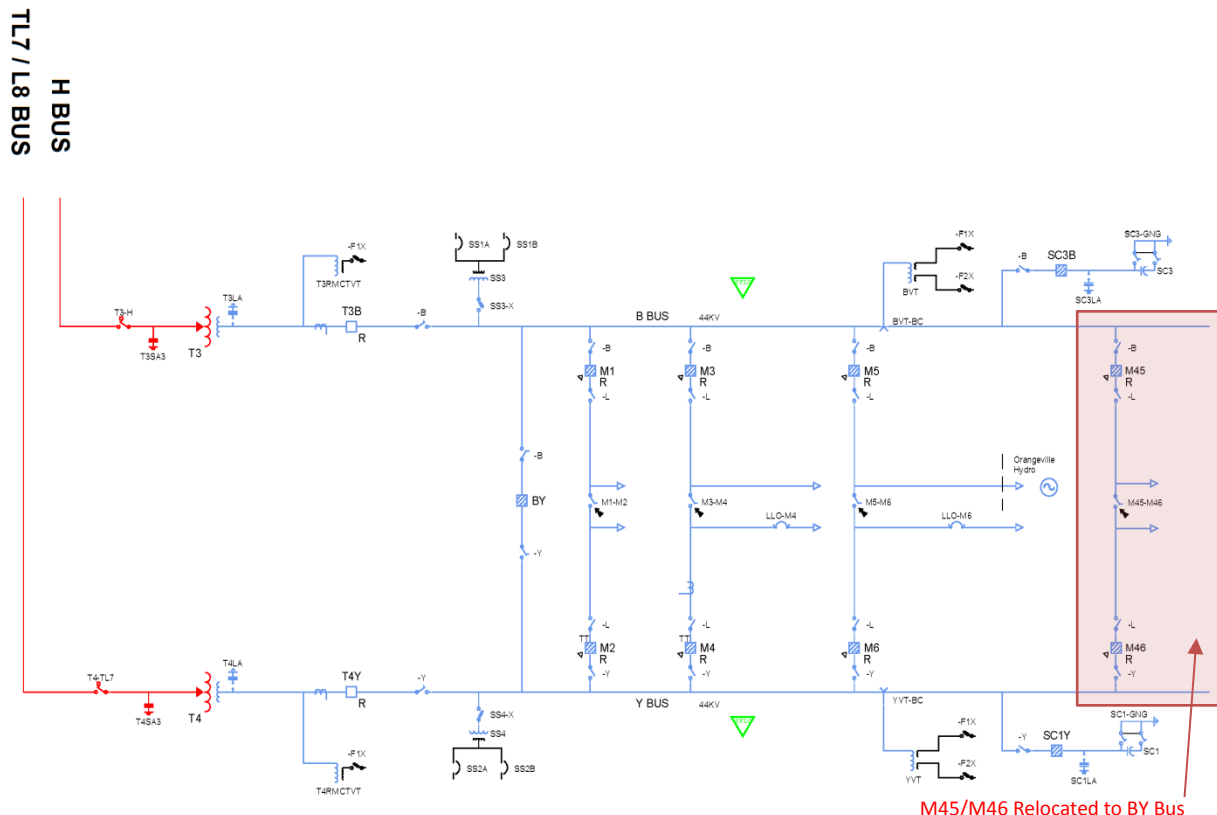


Figure 6: Orangeville T3/T4 DESN after Alternative 3 reconfiguration

Appendix B: Load Forecasts South Georgian Bay/Muskoka

Station		2013 (Reference)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Alliston TS (T2) LTR (MVA) S: 100 W: 115	Non Coincidental Gross		28.7	29.1	29.5	29.7	30.2	30.7	31.2	31.5	31.8	32.1
	CDM (MW)		0.2	0.4	0.6	0.6	0.8	1.3	1.7	1.8	2.1	2.3
	DG (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Non Coincidental Net	28.6	28.5	28.7	28.9	29.1	29.4	29.4	29.5	29.7	29.7	29.8
	Coincidental Net	26.1	25.9	26.2	26.4	26.5	26.8	26.8	26.9	27.0	27.1	27.2
Alliston TS (T3/T4) LTR (MVA) S: 112 W: 128	Non Coincidental Gross		60.1	68.5	71.4	74.4	77.4	80.3	82.9	85.6	88.3	90.9
	CDM (MW)		0.5	0.9	1.4	1.6	2.1	3.3	4.5	5.0	5.7	6.5
	DG (MW)	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077
	Non Coincidental Net	60.8	59.6	67.5	70.0	72.7	75.2	76.9	78.3	80.5	82.5	84.4
	Coincidental Net	55.1	54.1	61.2	63.5	66.0	68.2	69.8	71.1	73.0	74.8	76.6
Barrie TS LTR (MVA) S: 115 W: 128	Non Coincidental Gross		96.3	99.1	102.6	107.1	113.5	120.6	128.6	136.7	144.8	153.0
	CDM (MW)		0.7	1.3	1.9	2.3	3.1	4.9	6.9	8.0	9.4	10.9
	DG (MW)	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027
	Non Coincidental Net	94.0	95.6	97.7	100.6	104.8	110.4	115.6	121.6	128.6	135.4	142.1
	Coincidental Net	90.5	92.0	94.1	97.0	100.9	106.3	111.4	117.2	123.9	130.4	136.9
Beaverton TS LTR (MVA) S: 204 W: 224	Non Coincidental Gross		96.6	97.6	98.6	98.9	100.1	101.3	102.6	103.3	103.9	104.5
	CDM (MW)		0.7	1.3	1.9	2.1	2.7	4.1	5.5	6.1	6.7	7.4
	DG (MW)	1.655	1.655	1.655	1.655	1.655	1.655	1.655	1.655	1.655	1.655	1.655
	Non Coincidental Net	92.7	94.2	94.6	95.1	95.1	95.7	95.5	95.4	95.6	95.5	95.4
	Coincidental Net	89.2	90.6	91.0	91.4	91.5	92.0	91.9	91.7	91.9	91.8	91.7
Bracebridge TS LTR (MVA) S: 93 W: 93	Non Coincidental Gross		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	CDM (MW)		0.2	0.3	0.4	0.4	0.5	0.8	1.1	1.2	1.3	1.4
	DG (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Non Coincidental Net	20.0	19.9	19.7	19.6	19.6	19.5	19.2	18.9	18.8	18.7	18.6
	Coincidental Net	20.0	19.8	19.7	19.6	19.6	19.5	19.2	18.9	18.8	18.7	18.6

Station		2013 (Reference)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Everett TS	Non Coincidental Gross		59.3	61.2	62.4	64.4	65.6	67.5	69.2	70.9	73.4	75.1
LTR (MVA)	CDM (MW)		0.4	0.8	1.2	1.4	1.8	2.8	3.7	4.2	4.7	5.3
S: 96	DG (MW)	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
W: 96	Non Coincidental Net	54.7	58.8	60.4	61.2	63.0	63.8	64.7	65.4	66.7	68.6	69.7
	Coincidental Net	55.1	59.2	60.8	61.7	63.4	64.2	65.2	66.0	67.3	69.2	70.3
Lindsay TS	Non Coincidental Gross		91.6	93.3	94.3	94.6	95.9	97.5	98.9	99.9	100.9	101.8
LTR (MVA)	CDM (MW)		0.7	1.3	1.8	2.0	2.6	4.0	5.3	5.9	6.5	7.2
S: 169	DG (MW)	1.634	1.634	1.634	1.634	1.634	1.634	1.634	1.634	1.634	1.634	1.634
W: 193	Non Coincidental Net	89.2	89.3	90.4	90.9	90.9	91.6	91.9	91.9	92.4	92.7	92.9
	Coincidental Net	84.1	84.1	85.1	85.6	85.6	86.4	86.6	86.6	87.0	87.3	87.6
Meaford TS	Non Coincidental Gross		29.9	30.4	30.9	31.1	31.7	32.2	32.8	33.2	33.6	34.0
LTR (MVA)	CDM (MW)		0.2	0.4	0.6	0.7	0.9	1.3	1.8	1.9	2.2	2.4
S: 54	DG (MW)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
W: 61	Non Coincidental Net	29.7	29.7	30.0	30.3	30.4	30.8	30.9	31.0	31.2	31.4	31.6
	Coincidental Net	26.1	26.0	26.3	26.5	26.7	27.0	27.1	27.2	27.4	27.6	27.7
Midhurst TS (T1/T2)	Non Coincidental Gross		107.8	112.8	117.0	120.9	125.5	129.9	134.4	138.6	142.9	147.2
LTR (MVA)	CDM (MW)		0.8	1.5	2.2	2.6	3.4	5.3	7.3	8.1	9.2	10.5
S: 172	DG (MW)	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844
W: 194	Non Coincidental Net	101.6	106.1	110.4	113.9	117.5	121.2	123.7	126.3	129.6	132.8	135.9
	Coincidental Net	99.0	103.4	107.6	111.1	114.5	118.1	120.6	123.1	126.4	129.5	132.5
Midhurst TS (T3/T4)	Non Coincidental Gross		77.1	79.3	81.5	83.8	86.1	88.3	90.5	92.7	95.0	97.4
LTR (MVA)	CDM (MW)		0.6	1.1	1.5	1.8	2.4	3.6	4.9	5.4	6.1	6.9
S: 166	DG (MW)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
W: 192	Non Coincidental Net	75.0	76.5	78.2	79.9	82.0	83.7	84.7	85.6	87.3	88.9	90.5
	Coincidental Net	54.1	55.2	56.4	57.7	59.1	60.4	61.1	61.7	63.0	64.1	65.3
Minden TS	Non Coincidental Gross		56.2	56.7	57.3	57.8	58.3	58.8	59.3	59.9	60.4	61.0
LTR (MVA)	CDM (MW)		0.4	0.8	1.1	1.2	1.6	2.4	3.2	3.5	3.9	4.3

Station		2013 (Reference)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
S: 59	DG (MW)	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
W: 64	Non Coincidental Net	55.0	55.8	55.9	56.2	56.5	56.7	56.4	56.1	56.4	56.5	56.7
	Coincidental Net	45.0	45.7	45.8	46.0	46.3	46.4	46.2	45.9	46.1	46.2	46.3
Muskoka TS												
	Non Coincidental Gross		166.9	168.9	171.0	171.8	174.3	176.9	179.6	181.4	183.1	184.8
LTR (MVA)	CDM (MW)		1.3	2.3	3.2	3.7	4.8	7.2	9.7	10.6	11.8	13.1
S: 154	DG (MW)	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
W: 175	Non Coincidental Net	165.0	165.2	166.2	167.3	167.7	169.1	169.2	169.4	170.3	170.8	171.2
	Coincidental Net	145.4	145.6	146.4	147.4	147.7	149.0	149.1	149.3	150.0	150.5	150.8
Orangeville TS (T1/T2 - 27.6kV)												
	Non Coincidental Gross		51.4	51.9	53.1	54.2	55.4	56.6	57.8	59.0	60.0	61.0
	CDM (MW)		0.4	0.7	1.0	1.2	1.5	2.3	3.1	3.5	3.9	4.3
LTR (MVA)	DG (MW)	3.154	3.154	3.154	3.154	3.154	3.154	3.154	3.154	3.154	3.154	3.154
S: 104	Non Coincidental Net	49.3	47.9	48.1	48.9	49.9	50.7	51.1	51.5	52.4	53.0	53.5
W: 122	Coincidental Net	23.5	21.1	21.2	21.6	22.1	22.5	22.7	22.9	23.2	23.5	23.8
Orangeville TS (T1/T2 - 44kV)												
	Non Coincidental Gross		23.4	23.9	24.3	24.6	25.1	25.6	26.1	26.6	27.0	27.4
	CDM (MW)		0.2	0.3	0.5	0.5	0.7	1.0	1.4	1.6	1.7	1.9
LTR (MVA)	DG (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S: 53	Non Coincidental Net	24.0	23.2	23.6	23.8	24.1	24.4	24.6	24.7	25.0	25.3	25.5
W: 58	Coincidental Net	23.5	22.8	23.1	23.4	23.6	23.9	24.1	24.3	24.5	24.7	24.9
Orangeville TS (T3/T4)												
	Non Coincidental Gross		86.2	87.7	89.3	90.3	92.2	94.1	96.1	97.6	99.1	100.5
LTR (MVA)	CDM (MW)		0.6	1.2	1.7	1.9	2.5	3.8	5.2	5.7	6.4	7.1
S: 106	DG (MW)	2.058	2.058	2.058	2.058	2.058	2.058	2.058	2.058	2.058	2.058	2.058
W: 124	Non Coincidental Net	82.6	83.5	84.5	85.5	86.3	87.6	88.2	88.9	89.8	90.6	91.3
	Coincidental Net	82.6	83.4	84.5	85.6	86.3	87.6	88.2	88.8	89.8	90.6	91.3
Orillia TS												
	Non Coincidental Gross		126.2	128.2	130.7	131.5	133.9	136.5	139.5	141.1	143.0	144.9
LTR (MVA)	CDM (MW)		0.9	1.7	2.5	2.8	3.7	5.6	7.5	8.3	9.2	10.3
S: 165	DG (MW)	2.432	2.432	2.432	2.432	2.432	2.432	2.432	2.432	2.432	2.432	2.432
W: 186	Non Coincidental Net	122.4	122.8	124.0	125.8	126.2	127.8	128.5	129.5	130.4	131.3	132.2

Station		2013 (Reference)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Coincidental Net	114.5	114.8	115.9	117.5	117.9	119.4	120.0	121.0	121.8	122.7	123.5
Parry Sound TS	Non Coincidental Gross		61.2	61.8	62.4	62.6	63.3	64.2	65.0	65.5	66.0	66.5
LTR (MVA)	CDM (MW)		0.5	0.8	1.2	1.3	1.7	2.6	3.5	3.8	4.3	4.7
S: 52	DG (MW)	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
W: 57	Non Coincidental Net	57.5	60.7	61.0	61.2	61.2	61.6	61.6	61.5	61.6	61.7	61.8
	Coincidental Net	52.5	55.4	55.6	55.9	55.9	56.2	56.2	56.1	56.3	56.3	56.3
Stayner TS	Non Coincidental Gross		139.4	140.6	141.9	142.2	143.8	145.6	147.3	148.3	149.3	150.2
LTR (MVA)	CDM (MW)		1.0	1.9	2.7	3.1	3.9	6.0	8.0	8.7	9.6	10.7
S: 191	DG (MW)	18.864	18.864	18.864	18.864	18.864	18.864	18.864	18.864	18.864	18.864	18.864
W: 214	Non Coincidental Net	138.3	119.5	119.9	120.3	120.3	121.0	120.8	120.5	120.7	120.8	120.7
	Coincidental Net	129.3	110.5	110.8	111.3	111.2	111.9	111.7	111.4	111.7	111.7	111.6
Wallace TS	Non Coincidental Gross		40.0	40.6	41.1	41.2	41.8	42.4	42.9	43.3	43.6	43.9
LTR (MVA)	CDM (MW)		0.3	0.5	0.8	0.9	1.1	1.7	2.3	2.5	2.8	3.1
S: 55	DG (MW)	3.871	3.871	3.871	3.871	3.871	3.871	3.871	3.871	3.871	3.871	3.871
W: 60	Non Coincidental Net	39.3	35.8	36.2	36.4	36.4	36.8	36.8	36.7	36.9	36.9	36.9
	Coincidental Net	34.1	30.5	30.9	31.1	31.1	31.4	31.4	31.3	31.5	31.5	31.5
Waubashene TS	Non Coincidental Gross		95.5	96.6	97.7	98.1	99.5	100.9	102.4	103.3	104.2	105.1
LTR (MVA)	CDM (MW)		0.7	1.3	1.9	2.1	2.7	4.1	5.5	6.1	6.7	7.5
S: 100	DG (MW)	0.882	0.882	0.882	0.882	0.882	0.882	0.882	0.882	0.882	0.882	0.882
W: 110	Non Coincidental Net	94.1	93.9	94.4	95.0	95.1	95.9	95.9	96.0	96.4	96.6	96.8
	Coincidental Net	91.3	91.1	91.6	92.1	92.2	93.0	93.0	93.0	93.4	93.7	93.8

1. South Georgian Bay / Muskoka region is winter peaking
2. DG value (MW) is cumulative
3. DG value includes all distribution-connected generation, including MicroFIT

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CDM allocation factor	0.75%	1.34%	1.90%	2.15%	2.74%	4.09%	5.40%	5.87%	6.46%	7.10%

CDM value is the percentage reduction applied to gross peak demand at each station

Appendix C: Acronyms

BES	Bulk Electric System
BPS	Bulk Power System
CDM	Conservation and Demand Management
CIA	Customer Impact Assessment
CGS	Customer Generating Station
CTS	Customer Transformer Station
DESN	Dual Element Spot Network
DG	Distributed Generation
DSC	Distribution System Code
GS	Generating Station
GTA	Greater Toronto Area
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Planning
kV	Kilovolt
LDC	Local Distribution Company
LP	Local Planning
LTE	Long Term Emergency
LTR	Limited Time Rating
LV	Low-voltage
MW	Megawatt
MVA	Mega Volt-Ampere
NA	Needs Assessment
NERC	North American Electric Reliability Corporation
NGS	Nuclear Generating Station
NPCC	Northeast Power Coordinating Council Inc.
OEB	Ontario Energy Board
OPA	Ontario Power Authority
ORTAC	Ontario Resource and Transmission Assessment Criteria
PF	Power Factor
PPWG	Planning Process Working Group
RIP	Regional Infrastructure Planning
SIA	System Impact Assessment
SS	Switching Station
TS	Transformer Station
TSC	Transmission System Code
ULTC	Under Load Tap Changer